

TAPHONOMY OF AN AMMONITE RECORDED ASSOCIATION (MURCHISONAE ZONE, AALENIAN, IBERIAN RANGE, SPAIN). PALAEOENVIRONMENTAL IMPLICATIONS.

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Murchisonae Zone ammonites are very scarce in the Iberian Range, mainly as a result of gaps in the geological record. However, a recorded association of ammonites, located in the so-called Barranco de Bocafoz outcrop, near Belchite (Zaragoza, Aragonese Branch), shows abundant specimens of characteristic taxa from the lowest part of the *Murchisonae* Zone. The total number of the *Murchisonae* studied ammonites is up 460. Specimens of the subfamily Leioceratinae are dominant (83,0 %), being the genera *Cypholioceras* [M], *Leioceras* [m] and *Ancolioceras* [M+m] the most common ammonites. Specimens of the subfamily Graphoceratinae are scarce (12,9 %), but *Ludwigia* [M+m] are well represented in the association. Specimens of the subfamily Hammatoceratinae are very scarce (2,8 %), although several species of the genera *Pseudammatoceras* [M] and *Bredya* [M] have been recognized. Tmetoceratinae, in particular the genre *Tmetoceras* [M+m], are very scarce (1,3 %). Phylloceratina and Lytoceratina are virtually absent. Consequently, this ammonite fossil assemblage is composed of Sub-Mediterranean taxa. This association is recorded in a bed composed by yellow-brown, mudstone to wackestone limestones, ranging in thickness from 10 to 30 cm. Textures and structures of bioturbation are common (*Zoophycos* in particular). Macrofossils, especially ammonites, are abundant. Bivalves, gastropods, terebratulid and rhynchonellid brachiopods, nautiloids, crinoid ossicles and belemnite guards occur. Those taxa which preferred firm or hard sedimentary grounds are absent. These Aalenian deposits are interpreted as having been deposited in an open, shallow, carbonate platform. The taphonomy of the ammonite remains of this association is described in terms of preservational state, specifically the degree and nature of biodegradation, encrustation, sedimentary infilling, mineralization, abrasion, bioerosion, dissolution, taphonomic distortion, necrokynesis and fossildiagenetic displacements (reorientation, disarticulation, dispersal, regrouping and removal). The ammonites are commonly preserved as calcareous moulds of resedimented shells (*i.e.*, displaced on the sea-bottom, before their burial). It is noteworthy the diverse structure of the populations shells in accordance with the taxonomic group. Hammatoceratinae and Tmetoceratinae are represented by taphonic populations of type-3 (*i.e.* composed of polyspecific shells showing uni- or polymodal and asymmetric distribution of size frequencies, with negative skew; shells of juvenile individuals are absent, microconchs are very scarce and shells of adult individuals are predominant). Most of these *Murchisonae* ammonite shells represent ademic organisms and are interpreted as allochthonous elements having arrived at their present location by necroplanktic drift from northern, more open marine or oceanic areas. In contrast, Leioceratinae and Graphoceratinae are represented by taphonic populations of type-2 (*i.e.* composed of mono- or polyspecific shells, showing unimodal and normal distribution of size-frequencies;

microconchs represent a low proportion and shells of juvenile individuals are scarce, whilst shells of adult individuals are common). The occurrence of taphonic populations of type 2, showing no signs of sorting by necroplanktic drift or transport, is indicative of autochthonous biogenic production of shells. In conclusion, the occurrence of this recorded association confirm the development of a last phase of advanced shallowing of a deepening/shallowing cycle of 3rd order, in the Aragonese platform, during the upper part of the *Opalinum* Zone and the lowest part of the *Murchisonae* Zone.